

AMENDMENTS TO THE CLAIMS

1-82. (Canceled)

83. (Previously presented) A scanning apparatus, comprising:
a multiply-jointed arm having a plurality of arm segments and a data communication link to transmit data; and
a scanner mounted on an arm segment of the multiply-jointed arm for movement therewith to capture data from a plurality of points on a surface of an object, the scanner having a housing enclosing:
(a) a light source operable to emit light onto the object surface;
(b) a light detector operable to detect light reflected from the object surface and to generate electrical image data signals in dependence upon the detected light; and
(c) a data processor operable to process the electrical image data signals to generate processed data of reduced quantity, the data processor being connected to the data communication link to transmit the processed data therealong.

84. (Previously presented) A scanning apparatus according to Claim 83, wherein the data processor is operable to generate the processed data of reduced quantity by processing the electrical image data signals to generate measurement data and processing the measurement data to reduce the quantity thereof.

85. (Previously presented) A scanning apparatus according to Claim 83, wherein the data processor is operable to generate the processed data of reduced quantity by filtering the data.

86. (Previously presented) A scanning apparatus according to Claim 83, wherein the data processor is operable to generate the processed data of reduced quantity by discarding data.

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87. (Previously presented) A scanning apparatus according to Claim 83, wherein the communication link comprises a cable.

88. (Previously presented) A scanning apparatus according to Claim 83, further comprising a battery power supply within the apparatus to power the scanner.

89. (Previously presented) A scanner mountable on a multiply-jointed arm for movement therewith to capture data from a plurality of points on a surface of an object, the scanner having a housing enclosing:

a light source operable to emit light onto the object surface;

a light detector operable to detect light reflected from the object surface and to generate electrical image data signals in dependence upon the detected light; and

a data processor operable to process the electrical image data signals to generate processed data of reduced quantity, the data processor being connectable to a data communication link to transmit the processed data therealong.

90. (Previously presented) A scanner according to Claim 89, wherein the data processor is operable to generate the processed data of reduced quantity by processing the electrical image data signals to generate measurement data and processing the measurement data to reduce the quantity thereof.

91. (Previously presented) A scanner according to Claim 89, wherein the data processor is operable to generate the processed data of reduced quantity by filtering the data.

92. (Previously presented) A scanner according to Claim 89, wherein the data processor is operable to generate the processed data of reduced quantity by discarding data.

93. (Previously presented) A scanning apparatus, comprising:
a multiply-jointed arm having a plurality of arm segments;
a scanner mounted on an arm segment of the multiply-jointed arm for movement therewith to capture data from a plurality of points on a surface of an object, the scanner having a housing enclosing:

- (a) a light source operable to emit light onto the object surface;
 - (b) a light detector operable to detect light reflected from the object surface and to generate electrical image data signals in dependence upon the detected light; and
 - (c) a data processor operable to process the electrical image data signals to generate digital image data; and
- a bus connected to the data processor of the scanner to transmit the digital image data.

94. (Previously presented) A scanning apparatus according to Claim 93, wherein the data processor comprises a frame grabber.

95. (Previously presented) A scanning apparatus according to Claim 93, further comprising a battery power supply within the apparatus to power the scanner.

96. (Previously presented) A scanner mountable on a multiply-jointed arm for movement therewith to capture data from a plurality of points on a surface of an object, the scanner having a housing enclosing:

- a light source operable to emit light onto the object surface;
- a light detector operable to detect light reflected from the object surface and to generate electrical image data signals in dependence upon the detected light; and
- a data processor operable to process the electrical image data signals to generate digital image data,

the data processor being connectable to a bus to transmit the digital image data.

97. (Previously presented) A scanner according to Claim 96, wherein the data processor comprises a frame grabber.

98. (Previously presented) A coordinate measuring machine, comprising:
a multiply-jointed arm having a plurality of arm segments and a physical data path to transmit data; and

a scanner mounted on an arm segment of the multiply-jointed arm for movement therewith to capture data from a plurality of points on a surface of an object, the scanner having a housing enclosing:

a light source operable to emit light onto the object surface;

a light detector operable to detect light reflected from the object surface and to generate electrical image data signals in dependence upon the detected light; and

a data processor operable to process the electrical image data signals to generate data defining coordinate measurements of the surface of the object, and to transmit the generated data on the physical data path.

99. (Previously presented) A coordinate measuring machine according to Claim 98, wherein the data processor is arranged to process the electrical image data signals to generate data defining coordinate measurements comprising three-dimensional positions.

100. (Previously presented) A coordinate measuring machine according to Claim 98, wherein the data processor is arranged to process the electrical image data signals to generate data defining coordinate measurements comprising points in three-dimensional space.

101. (Previously presented) A coordinate measuring machine according to Claim 98, wherein the data processor is arranged to process the electrical image data signals to generate data defining coordinate measurements comprising connected polygons in three-dimensional space.

102. (Previously presented) A coordinate measuring machine according to Claim 98, wherein the physical data path comprises a cable.

103. (Previously presented) A coordinate measuring machine according to Claim 98, further comprising a batter power supply within the apparatus to power the scanner.

104. (Previously presented) A scanner mountable on a multiply-jointed arm for movement therewith to capture data from a plurality of points on a surface of an object, the scanner having a housing enclosing:

a light source operable to emit light onto the object surface;

a light detector operable to detect light reflected from the object surface and to generate electrical image data signals in dependence upon the detected light; and

a data processor operable to process the electrical image data signals to generate data defining coordinate measurements of the surface of the object, and to transmit the generated data on a physical data path.

105. (Previously presented) A scanner according to Claim 104, wherein the data processor is arranged to process the electrical image data signals to generate data defining coordinate measurements comprising three-dimensional positions.

106. (Previously presented) A scanner according to Claim 104, wherein the data processor is arranged to process the electrical image data signals to generate data defining coordinate measurements comprising points in three-dimensional space.

107. (Previously presented) A scanner according to Claim 104, wherein the data processor is arranged to process the electrical image data signals to generate data defining coordinate measurements comprising connected polygons in three-dimensional space.

108. (Previously presented) A laser scanning apparatus, comprising:
a multiply-jointed arm having a plurality of arm segments and a data communication link to transmit data; and
a laser scanner mounted on an arm segment of the multiply-jointed arm for movement therewith to capture data from a plurality of points on a surface of an object, the laser scanner having a housing enclosing:
(a) a laser to emit a laser stripe onto the object surface;
(b) a camera operable to generate images of laser light reflected from the object surface; and
(c) a data processor operable to process the images generated by the camera to generate processed data defining a position of the laser stripe in the images, the data processor being connected to the data communication link to transmit the processed data therealong.

109. (Previously presented) A laser scanning apparatus according to Claim 108, wherein:
the camera is arranged to generate images comprising a plurality of pixels; and
the data processor is arranged to process the images generated by the camera to generate processed data defining a position of the laser stripe in the images to sub-pixel accuracy.

110. (Previously presented) A laser scanning apparatus according to Claim 108, wherein the data communication link comprises a cable.

111. (Previously presented) A laser scanning apparatus according to Claim 108, further comprising a battery power supply within the apparatus to power the laser scanner.

112. (Previously presented) A laser scanner mountable on a multiply-jointed arm for movement therewith to capture data from a plurality of points on a surface of an object, the laser scanner having a housing enclosing:

- a laser to emit a laser stripe onto the object surface;
- a camera operable to generate images of laser light reflected from the object surface; and
- a data processor operable to process the images generated by the camera to generate processed data defining a position of the laser stripe in the images, the data processor being connectable to a data communication link to transmit the processed data therealong.

113. (Previously presented) A laser scanner according to Claim 112, wherein:

- the camera is arranged to generate images comprising a plurality of pixels; and
- the data processor is arranged to process the images generated by the camera to generate processed data defining a position of the laser stripe in the images to sub-pixel accuracy.

114. (Previously presented) A laser scanning apparatus, comprising:

- a multiply-jointed arm having a plurality of arm segments and a data communication link to transmit data; and
- a laser scanner mounted on an arm segment of the multiply-jointed arm for movement therewith to capture data from a plurality of points on a surface of an object, the laser scanner having a housing enclosing:

- (a) a laser to emit at least one laser stripe onto the object surface;
- (b) a camera operable to generate images of laser light reflected from the object surface, each image comprising a plurality of pixels; and
- (c) a data processor operable to process the images generated by the camera to perform measurements to sub-pixel accuracy, the data processor being connected to the data communication link to transmit results of the measurements therealong.

115. (Previously presented) A laser scanning apparatus according to Claim 114, wherein the data communication link comprises a cable.

116. (Previously presented) A laser scanning apparatus according to Claim 114, further comprising a batter power supply within the apparatus to power the laser scanner.

117. (Previously presented) A laser scanner mountable on a multiply-jointed arm for movement therewith to capture data from a plurality of points on a surface of an object, the laser scanner having a housing enclosing:

- a laser to emit at least one laser stripe onto the object surface;
- a camera operable to generate images of laser light reflected from the object surface, each image comprising a plurality of pixels; and
- a data processor operable to process the images generated by the camera to perform measurements to sub-pixel accuracy, the data processor being connectable to a data communication link to transmit results of the measurements therealong.